

SCIENCE & GOVERNMENT REPORT

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NIH Leadership: Last of the "Troika" is Resigning

The top echelons at NIH were depleted by yet another resignation last month when Deputy Director John F. Sherman, a veteran of 21 years' service at the agency, revealed that he will soon be leaving to take a better-paying and less frustrating job as vice-president of the Association of American Medical Colleges (AAMC).

Sherman used the occasion of his resignation to take a few jabs at the Nixon Administration's health managers, who, he claimed, are displaying attitudes that could, over time, "destroy the excellence of NIH." The criticism—and more especially an editorial endorsement of that criticism by the Wash-

ington Post—obviously stung. Charles C. Edwards, assistant secretary for health in HEW, retorted that whatever problems plague NIH stem from its own "inadequate leadership" and a "misguided sense" of the importance of research.

Such is the state of hostility between the Nixon Administration's health managers and the old guard leadership at NIH in a continuing conflict that is deep-seated but ill-defined. The struggle is reflected in a range of issues, but the nub of the matter is that the Administration has been centralizing decision-making power on health issues at the HEW headquarters level and in OMB, much to the consternation of many NIH officials who believe the agency owes its success in fostering biomedical research

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Job Figures Faked

The Nixon Administration's penchant for fakery has even cropped up in the program that was set up in 1971 to help find work for engineers, scientists, and technicians who lost their jobs because of cutbacks in defense and aerospace spending.

According to a 38-page report by the General Accounting Office (GAO), "Our review showed that the numbers reported as being assisted by the program were overstated . . . Placements were . . . claimed for persons who had never registered in the program. Assistance in finding jobs was often claimed when no evidence existed that the program had provided any assistance. Due to these inaccuracies, the actual number of persons assisted by the program is difficult to ascertain."

Known as Technology Mobilization and Reemployment (TMR), the \$42-million program was administered by the Department of Labor, which predicted at the outset that it would help find jobs for 40,000 persons. When the program expired last June, the Department reported that it had assisted in placing 29,855 job seekers, but according to the GAO, the true total is probably about one-third that number.

Stressing the difficulties of finding jobs for high-priced aerospace and defense specialists in civilian industry, the GAO charitably concluded that the TMR program was "reasonably successful," though it "fell short of estimated goals."

In Print

Treasury Secretary Shultz' imminent departure from government service will have some reverberations on the Administration's minuscule interest in science-policy matters. The multi-hatted Shultz is the main White House contact for NSF Director H. Guyford Stever in Stever's role as Science Advisor to the President.

Concorde slips again: Originally scheduled to go into commercial service last year, the Franco-British SST was then rescheduled to make its commercial debut this year. But with no buyers except for British and French airlines, the manufacturers have fallen back on the energy crisis as an excuse for still another delay—to 1976.

NSF's monthly Bulletin asks anxiety-ridden grant applicants to refrain from pestering the Foundation's personnel with telephone inquiries about the fate of their applications. Official word is conveyed in writing, the Bulletin states, and "the NSF staff cannot imply commitments over the telephone which have not been made officially in writing."

Ellis Mottur, Senator Kennedy's staff man for scientific matters outside the biomedical field, has joined the Office of Technology Assessment, which is a sort of homecoming for Mottur, since Kennedy is chairman of the congressional board that oversees OTA and Mottur was closely involved with OTA planning even prior to its official starting date.

HEW Health Chief Charges Weak NIH Leadership

While NIH Deputy Director John Sherman was complaining about the "negative" management philosophy of HEW leaders, Assistant Secretary of Health Charles C. Edwards charged that the real leadership problem is at NIH itself.

Edwards' rejoinder was prompted by an editorial in the *Washington Post*, headlined "Trouble at NIH," which supported Sherman's complaints and urged HEW leaders "to grant NIH the autonomy and respect their predecessors have granted it." Such a change in attitude is necessary, the *Post* suggested, "to restore NIH's world-wide reputation for excellence."

But Edwards, in a letter to the *Post*, contended that the "halcyon time" when NIH could be treated as "an independent part of the federal health enterprise" and insulated from "the serious fiscal and managerial problems that must concern us all" is now past.

"Clearly we do have to restore confidence in NIH," he said, "confidence that was diminished in the past through inadequate leadership and a misguided sense of the place of research in the nation's efforts to solve its health problems."

Stressing the need to maintain a balanced biomedical research effort, Edwards blamed the NIH leadership for shortsighted attitudes that led political leaders to overemphasize cancer research at the expense of other biomedical research. "If, in fact, the NIH leadership had been more perceptive and responsive," he said, "we might not have witnessed the removal of the cancer research effort from the administrative control of NIH, a move that threatens the further dissolution of biomedical research efforts."

"Institutions—even the finest biomedical institution in the world—must change," he continued. "Fortunately, the need for constructive change is appreciated and welcomed by many scientists at NIH and elsewhere who do not share the sentiments of Dr. Sherman and who are determined that NIH will contribute effectively and creatively to solution of the health problems facing this country and the world."

As Sherman observed in an interview with SGR, there is clearly a "culture gap" and a "breakdown in communications" between the scientists at NIH and the managers at HEW.

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largely to the fact that it was granted considerable autonomy.

The dispute over the "politicalization" of NIH, as the scientific community is apt to characterize it, has led, directly or indirectly, to a sizable exodus of top NIH officials over the past year or so. The first to depart was Director Robert Q. Marston, who was surprised to find that the resignation he routinely submitted after Nixon's re-election in November 1972 was snapped up as part of a Nixon drive to sweep out all Johnson Administration holdovers. Marston retaliated last April with a farewell address in which he likened the Administration's health policies to those of a "jackass" and cited charges that the Administration was destroying NIH.

The next major figure to leave was Robert W. Berliner, deputy NIH director for science, who resigned in mid-1973 after 23 years at the agency to become dean of the Yale School of Medicine. Berliner explained that his reasons for leaving were largely personal, but he added: "I would be less than candid if I were to claim that the Administration's attitude toward the conduct and support of biomedical research played no part in my decision."

Now Sherman, the last remnant of the Marston-Sherman-Berliner troika that ran NIH during the

first Nixon Administration, is also bailing out with similar expressions of unhappiness, revealed in a personal letter to his colleagues at NIH and in a series of interviews with reporters from the general and specialized media.

Sherman's letter was a model of understatement and bureaucratic circumspection. He said merely that he had been "disappointed recently in the general atmosphere and attitudes affecting the fortunes of NIH" and was "discouraged with my inability to convey effectively our case or otherwise influence the decision-making process external to NIH." He also explained that he was taking the newly created post of vice president of the AAMC because it provided "a more effective vantage point" to work for biomedical progress "than is possible at present" within the government.

But under prodding from reporters, Sherman's language got tougher. In an interview with the *Washington Post* he charged that "NIH's proud record of excellence, if not the very purpose of the organization, is threatened by the second Nixon administration." And in an interview with the *Washington Star*, he sighed: "What really is at stake is the essence of this place."

Sherman's specific complaints are difficult to pin down. He told SGR that he is disturbed by tangible

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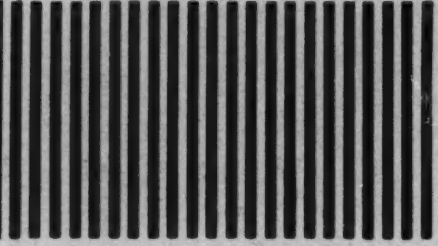
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Support Gains for NASA Civilian Technology Role

A new proposal for expanding research on "critical domestic problems" has gathered influential support in the Senate and appears to be a likely successor to Senator Kennedy's all-but-defunct National Science Policy and Priorities Act (S.32) as the rallying point for Congressional critics of the Administration's science policies.

The new bill (S.2495) would expand the activities of the National Aeronautics and Space Administration by setting up within the agency an Office of Technology Application, with a budget of \$200 million a year, to apply the talents of the aerospace industry to problems such as energy research, sewage treatment and health care delivery. A key feature of the bill is a proposal to establish a cabinet-

level committee to survey the technological resources available for such an effort.

The bill is sponsored by three Senators who occupy pivotal positions in committees which will handle the legislation—Frank Moss (D-Utah), chairman of the Committee on Aeronautical and Space Sciences; Warren Magnuson (D-Wash), chairman of the Commerce Committee, and John Tunney (D-Calif), chairman of the newly established Commerce subcommittee on research and development. Hearings will probably be held by the Space committee this month, though no date has yet been fixed.

Similarities with S.32 abound, although there are also some important differences, not least of which is the fact that the bill designates NASA as the lead agency, whereas S.32 would have given the National Science Foundation responsibility for administering a federal attack on domestic problems. S.2495 also lacks the provision in Kennedy's bill which decreed that expenditures on domestic research and development should be increased until they equal or exceed outlays on defense research.

The bill would establish a White House committee, chaired by the Vice President and composed of Cabinet members or their representatives, which would prepare a technology resources survey to "identify the existing scientific, engineering and technological activities, capabilities, programs and resources and the means by which each might be applied in the resolution of the nation's critical domestic problems".

The proposed NASA Office of Technology Application, formed from the present Office of Applications and Office of Technology Utilization, would "utilize aerospace firms and other scientific organizations in the private sector, on a contract basis, to assist in developing scientific strategies for the resolution of critical domestic problems".

A number of factors cloud the prospects for the bill. For one thing, it has been referred to both the Space Committee and the Commerce Committee and unless some mechanism can be worked out for both to consider it simultaneously, it could be considerably delayed. For another, if passed it would usurp some of the powers newly assigned to the National Science Foundation, namely the responsibility for developing and coordinating the federal government's science policies. It is thus likely to run into fire from the Administration.

As for the House, the Committee on Science and Astronautics already has its hands full with a slew of energy bills, but a committee aide generously acknowledged that "if the Senate does pass the bill, I guess we would hold some hearings on it".

With Kennedy and some of his staff preoccupied with the Office of Technology Assessment, S.32 is unlikely to be resurrected this session. But at least S.2495 should keep the debate about research priorities alive.

NIH (Continued from page 2.)

threats to NIH programs and by subtler issues as well. The tangible threats included such matters as manpower ceilings, which have reduced the NIH work staff by ten per cent over the past six years while the work load has increased substantially; salary limitations, which have made it difficult to recruit top management personnel (NIH has a top salary of \$36,000 while senior administrators at medical schools often make \$50,000 with substantial fringe benefits); and on-again off-again impoundment of funds which has made this "the most God-awful year to plan programs."

But Sherman's major concern stems from intangible threats—an uneasy feeling that "a negative climate" among higher-ups in the Administration "threatens the continued quality of NIH." Sherman notes wistfully that former HEW Secretary John Gardner once called NIH a "jewel in the crown of HEW," and that Gardner and other HEW secretaries gave NIH considerable autonomy and support to pursue biomedical excellence. But the Nixon Administration's management-minded executives, he complains, are moving in "with an iron hand" to run a research operation whose traditions they fail to understand. Moreover, Sherman questions whether his higherups at HEW are deeply committed to scientific excellence.

At least two other high NIH officials have also resigned recently. Thomas C. Chalmers, director of the Clinical Center, left to become president of the Mt. Sinai Medical Center. And Donald S. Frederickson, director of intramural research at the National Heart and Lung Institute, will leave soon to become president of the Institute of Medicine of the National Academy of Sciences. Frederickson stressed that he was leaving for positive reasons, not as a protest.

GAO Says Water Pollution Research is a Mess

The goals of the 1972 Water Pollution Control Act are slipping out of reach, not only because the Nixon Administration has withheld billions of dollars for sewage treatment plants, but also because the federal government's water pollution research is badly managed, underfunded and poorly coordinated, according to a massive report by the General Accounting Office (GAO).

The 1972 Act, which was passed by Congress over bitter opposition from the Administration, specifies that there should be no discharge of pollutants into navigable waters by 1985, that rivers, streams and lakes should be clean enough to swim in by 1983, and that industrial pollution should be cut by at least 85 per cent by 1977.

But, after studying the matter for more than a year with the help of a battery of outside experts, the GAO has concluded that "at present funding levels for water pollution R&D, it is doubtful that the 1985 deadline for zero discharge will be met. Both management and coordination of R&D programs need to be improved."

The chief problem is simply lack of money. In the five-year period immediately before Congress passed the water pollution act, the federal government spent about \$495 million on water pollution R&D, of which about \$238 million was channelled through the Environmental Protection Agency (EPA). Far from accelerating its research program in anticipation of Congressional action, however, the Administration took the knife to EPA's budget and the agency was forced to reduce its outlays on such research from some \$55 million in FY 1971 to about \$42 million in FY 1972.

EPA's water pollution program is divided into three main parts—process and effects research, which is designed to find out how pollutants get into water, what happens to them, and how they affect aquatic life; development of new technology for processing municipal sewage; and development of technology to control industrial pollution. According to the GAO they are all in bad shape.

Process and effects research is needed to establish water quality standards for the years before the ultimate goal of zero discharge is achieved. Yet the GAO quotes an unnamed EPA official as stating that "when EPA's current research is completed in about 1983, it will have carried out less than 1 per cent of the research needed to develop freshwater criteria for all aquatic life in all navigable waters." The GAO investigators added that the program has "provided little of the scientific knowledge necessary to determine the long-term effects or safe levels of most pollutants for aquatic life."

Marine research is in just as sad a state. Again, an EPA official is quoted as saying that "as a result of funding reductions, EPA has been unable to perform the studies necessary to establish a scientific basis for ocean-dumping guidelines." In 1970, the

Ford Nods to Science

The scientific community, in its everlasting quest for friends in high political office, has received a favorable sign from Vice President Ford.

Ford, who says he is too busy to take up a White House offer to examine evidence that allegedly exonerates President Nixon in the Watergate scandals, has found time to meet with a group known as the Committee of Scientific Society Presidents. Formed last year by the then-president of the American Chemical Society, Alan C. Nixon, the CSSP draws its membership from 23 scientific societies, and meets now and then to bemoan the lack of a national science policy.

According to an ACS announcement, the Committee met with the Vice President for "an off-the-record discussion of technological crises and how to facilitate interaction between the scientific community and the Government. . . ."

The announcement said that Alan Nixon described the discussion with Ford as "a frank and useful interchange of opinions and ideas." The talks "ranged over such areas as the role of science and technology in solving the energy crisis, ways to avoid such crises, federal management structure for science, interplay between the scientific community and the Government, and technical professional employment."

National Academy of Sciences recommended that a 10-year, \$66-million program should be initiated to provide scientific knowledge to help solve pollution problems in coastal areas. The GAO report says, however, that EPA officials are expecting to get only \$12.6 million for ocean dumping research in FY 74-78.

The National Marine Quality Laboratory at West Kingston, Rhode Island, an EPA establishment which carries out research on harmful effects of pollutants in the marine environment, "has not completed a major in-house research objective since starting research in 1967," the GAO charges, and as of April last year, the lab had completed about 5 per cent of the ecological research, 15 per cent of the bioassay research, and less than 1 per cent of the toxicological research needed to develop marine quality criteria.

Research on thermal pollution has been delayed because of lack of funding (although the Administration's budget for 1975 proposes a massive increase for such activities), and the report says that "EPA has not yet begun to solve the thermal pollution

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Awards of Government Patents Hit by Court Ruling

A federal court has ruled against the Nixon Administration's program to license government-owned inventions to private industry. The decision may also undermine Administration efforts to award rights in future inventions to industrial firms, universities, and other entities at the time a contract or grant agreement is signed.

The ruling was handed down by Judge Barrington D. Parker of the US District Court for the District of Columbia in a suit brought by Ralph Nader's Public Citizen Inc. and eleven congressmen against the General Services Administration (GSA), the agency which promulgates regulations for dealing with patents throughout the government.

Early last year the GSA issued regulations authorizing government agencies to grant licenses to private parties to use and develop "government-owned" inventions, which are inventions developed by federal agencies or with federal funds.

The Nader group claimed the regulations were unconstitutional because the Constitution prohibits an agency from granting exclusive licenses without Congressional approval, and no such approval had been given to GSA. The Naderites also contended that GSA had violated the Administrative Procedure Act because it failed to notify the public of the upcoming regulations but it did inform numerous trade organizations.

Judge Parker apparently agreed with some, perhaps all, of these arguments. On Jan. 17, he issued a simple two-page order granting the Nader group's motion for summary judgment and ordering GSA to

void its regulations. The order prohibited federal agencies from issuing any licenses under the regulations.

The long-range significance of Judge Parker's decision remains unclear, partly because the wording of his judgment is subject to differing interpretations. Government attorneys say the decision turned entirely on the procedural issue; they claim the judge made no explicit finding on the constitutional issue. The Nader lawyers told SGR this interpretation is "preposterous." As they read the decision, the Judge overturned the regulations on both constitutional and procedural grounds. At this writing, GSA has not decided whether to appeal the decision and seek clarification of the ruling.

Meanwhile, the Nader group is preparing a legal assault on another proposed set of GSA regulations that would allow government agencies to grant patent rights to contractors and grantees at the time a contract is signed. In such cases the government agrees to let the contractor exploit any future invention that might emerge from the R&D contract. The policy is aimed at encouraging the private sector to come up with inventions and move them quickly into the domestic economy. It affects not only industrial concerns, but universities and non-profit institutes as well.

Several agencies are already signing such patent agreements with contractors. Some, such as NSF, believe they have explicit authority from Congress to grant such patent rights; thus, NSF express little fear that the Nader thrust will upset its programs.

WATER R&D (Continued from page 4.)

problems which will be present in the nation's waters 20 years from now."

Development of municipal sewage treatment is, if anything, in even poorer shape. And the consequences could be more damaging because of the massive expenses that will be incurred in the next few years by the installation of new sewage treatment plants. If research and development could provide improvements which make even a slight percentage reduction in the cost of treatment plants, the overall saving would be immense.

But that logic doesn't seem to cut much ice with the Administration, for in fiscal year 1973, EPA obligated about \$3 billion for construction grants but only \$9.5 million for research and development aimed at improving control technology.

EPA officials reckon that about \$225 million will be needed between FY 1973 and FY 1978 to meet the municipal control technology goals specified by the Water Pollution Control Act, but in 1973, the program got only \$9.5 million. "At that level of funding, it would take about 24 years to carry out the research program," the GAO states.

The study also reports examples of industry's footdragging practices and immense non-coopera-

tion among federal agencies. "During discussions with representatives from industry and staff members of the National Industrial Pollution Control Council, we were informed that industry was reluctant to reveal to EPA the level of technology developed to control pollution because EPA might speed up its enforcement action, and industry might suffer a financial loss," the GAO states.

The GAO selected 263 projects being conducted by government agencies other than EPA in the area of industrial pollution, and discussed the projects with EPA officials. It found that EPA had contributed to only 15 of the projects and was indirectly aware of another 72. The agency was totally ignorant of the other 178 projects. Seventy-eight of the projects would have been useful to EPA in solving identified problems, and 37 duplicated EPA research or vice-versa.

What is needed to sort out this mess, the GAO suggests, is a national water pollution R&D strategy and a lead agency to coordinate efforts. An even greater need is more cash, but with the Nixon Administration slashing billions of dollars from Congressionally authorized funds for sewage treatment grants, that is too much to hope for.

Administration Gives Details on Energy R&D Plans

The Administration's loudly proclaimed technological drive toward energy self-sufficiency has advanced from the uncertain stage of Presidential promises to the slightly more reliable level of budgetary proposals. A statement distributed by the White House to provide the facts behind the rhetoric of President Nixon's first energy message of 1974 sets out in considerable detail how the Administration intends to divide the pie for energy R&D in FY 1975.

The proposals, which will be contained in the Administration's budget, now due to be unveiled on February 4, entail total obligations of \$1.8 billion, and another \$216 million would be put into supporting programs in environmental and health research and basic research and manpower development. It's a long way down the road from Nixon's statement of less than a year ago that "it is foolish and self-defeating to allocate (energy R&D) funds more rapidly than they can be spent," but it's still far from being money in the bank.

The budget proposals do little to alter the Administration's unflinching commitment to nuclear power, for fission technology is slated to carry off 40 percent of the funds, with the troubled breeder reactor soaking up \$473 million on its own. In other areas, however, everything gets — on paper at least — a large infusion of cash, and coal research gets the biggest increase.

The development of mining technology, coal liquefaction and gasification are down for \$426 million. A sharp increase has also been proposed for research and development on methods of getting rid of sulphur dioxide from the smoke stacks of power plants burning high-sulphur fuels — a proposal which came from Nixon in almost the same breath as the suggestion that environmental regulations should be relaxed during the power crisis.

As for more exotic methods of power production, solar energy and geothermal power are set for hefty percentage increases in funding, with the former slated to get \$50 million, and the latter \$44.7 million next year, up from \$13.8 and \$10.9 million respectively this year.

Thermonuclear fusion looks as though it is going to get the infusion of funds that its supporters have been recommending, but a close reading of the footnotes to the fact sheet shows the total includes research for military applications. The power generating fusion program is going to get little more than a modest \$100 million if the Administration gets its way.

The basis for many of the spending proposals is the 5-year energy R&D program drawn up by Dixy Lee

Your State Has a Science Adviser

It's not widely known, and often no more than mere window dressing is involved, but each of the 50 state governments has established a position of state science adviser or created a post that bears some resemblance to that title. In some instances, the jobs were created years ago, but most were created in response to President Nixon's March 1972 Science and Technology Message, which called for closer federal-state linkage in technological affairs. At the federal level, the focal point for this relationship is NSF's Office of Intergovernmental Science and Research Utilization (1800 G St., Nw., Washington, D.C. 20550), which will provide, without charge, an assortment of literature as well as a list of the state science advisers.

Ray, chairman of the Atomic Energy Commission, which was delivered to the White House in December (SGR Vol. III No. 22). Her suggestions have, however, been mauled by the Office of Management and Budget, and many of her priorities have been altered.

The chief change is that OMB has drastically reduced Dr. Ray's suggested spending levels for R&D on conservation technologies, and has lumped considerably more money into coal research. Efforts to increase production of domestic oil and gas also get less money under the Administration's budget request than they would if Dr. Ray's proposals had been accepted.

The odd thing about those changes is that Dr. Ray had calculated that conservation and increased domestic production of oil and gas would have the largest effect on offsetting imports of oil which, after all, is supposed to be the objective of the whole business. An OMB official explained, however, that the change of emphasis reflects the fact that the Administration believes that those two areas couldn't usefully absorb large funding increases next year; industry is also moving quite rapidly on its own in those fields, he said.

The budget will go to Congress where it will get chewed over by all the committees that have a stake in the business (and that is most of them), so it will be a long time before the cash is appropriated. And even longer before it is spent.

OMB Chief Says Impoundment to be Dropped

Confronted by a mounting pile of adverse court decisions, plus growing Congressional resentment, the Nixon Administration has announced that it will no longer attempt to evade legislative intent through the device of budgetary impoundment.

The announcement was made by Roy L. Ash, director of the Office of Management and Budget, which, in recent years, has honed the impoundment weapon to a fine edge.

Ash, who has flowed into the power vacuum created by the Watergate-related exodus of top aides from the first Nixon Administration, told the *New York Times*, "You can retire that word impoundment from your type. We may even forget how to spell it." Along with that cheery news, however, Ash did assert that, though impoundment may be removed from OMB's arsenal, the agency will nevertheless rely on the process of "reserving" appropriated funds as a means of pacing expenditures. That qualification, of course, provides a nice semantic out when the Administration chooses not to spend what Congress has appropriated. But it seems a safe

guess that for numerous activities that were hit hard by the impoundment device—research and education prominent among them—the wicked weapon is essentially a thing of the past.

In Print

Recent publications of more than routine interest:

The Effects of International Technology Transfers on the US Economy, preliminary papers prepared for a recent NSF-sponsored colloquium; contributors on this increasingly sensitive issue are Richard E. Caves, Harvard; Gary C. Hufbauer, U. New Mexico; Keith L. R. Pavitt, Sussex University, and Robert B. Stobaugh Jr., Harvard Business School. (116 pages, available without charge from NSF, Office of National R&D Assessment, 1800 G St., NW., Washington, D.C. 20050.)

France, Science Research and Development, slick brochure, providing a solid inventory of R&D activities in France. Available without charge from Press and Information Division, French Embassy, 972 5th Ave., New York, N.Y. 10021.

US Technology: Trends and Policies, by Michael Boretsky, senior policy analyst, US Department of Commerce. Boretsky, whose influence was considerable when the Nixon Administration was long ago interested in the linkage between research and industrial productivity, argues here that the US technological lead over foreign competitors is less than it appears to be and will rapidly decline in the absence of coordinated R&D policies and expanded expenditures. (168 p., a limited number available without charge from: Program of Policy Studies in Science and Technology, The George Washington University, Washington, D.C. 20006.)

Britain Cuts R&D Spending

Research budgets in Britain are being cut back as part of the government's seemingly hopeless attempt to pull the country out of its economic tailspin. But, with much of the workforce on a forced three-day working week, unemployment soaring, record trade deficits and threats of a total breakdown in coal supplies, British scientists are lucky to have escaped so far with a budget cut of a little less than 6 per cent.

The cutback—which amounts to \$18 million in the budgets of the research councils, the chief providers of cash for basic research—is the result of an emergency budget announced by Chancellor of the Exchequer Anthony Barber in mid-December. Barber slashed public expenditure by about \$2.7 billion, and the research councils announced their new estimates in January.

Some capital expenditures will be delayed, a slight reduction will be made in most operating budgets, and there will be belt tightening all round. Government administrators are trying to spread the reductions as thinly as possible, rather than hit individual programs.

University scientists can at least take some solace from the fact that they are not as badly affected as their colleagues in industry, because educational establishments have largely been exempted from compliance with the three-day working week.

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In Case You Want to Read More About the Energy Crisis

Anyone not yet surfeited with writings on the energy crisis may wish to take advantage of an opportunity to acquire, at little or no cost, the extensive series of energy publications issued over the past 20 months by the Subcommittee on Energy of the House Science and Astronautics Committee.

According to an announcement from Subcommittee Chairman Mike McCormack (D-Wash.), the following may be obtained without charge by writing to the Science and Astronautics Committee's Publications Office, Suite 2321, Rayburn Building, Washington, D.C. 20515.

Committee publications on energy currently in print:

March 1972	Briefings Before Task Force on Energy (Vol. II)	Serial Q
March 1972	An Inventory of Energy Research (Vols. I and II)	Serial R
August 1972	Briefings Before Task Force on Energy (Vol. III)	Serial U
December 1972	Solar Energy Research: A Multidisciplinary Approach	Serial Z
May 3, 1973 ff	Short Term Energy Shortages—Hearings Before the Subcommittee on Energy	#7
May 7, 1973 ff	Energy Research and Development and Space Technology	#9
May 15, 1973	Energy Research and Development—An Overview of our National Effort	#10
June 1973	Individual Action for Energy Conservation	Serial C
June 5, 1973	Solar Energy for the Terrestrial Generation of Electricity	#12
July 23, 1973	University Energy Research Centers	#11

Committee publication available from Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402

December 1972	Energy Research and Development; Price: \$2.35, domestic postpaid; \$2.00, GPO Bookstore	Serial EE
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Committee publications on energy out of print but may be available at certain libraries:

October 1971	Energy—The Ultimate Resource	Serial J
December 1971	Briefings Before Task Force on Energy (Vol. I)	Serial M
May 9, 1972 ff	Energy Research and Development—Hearings Before Subcommittee on Science, Research, and Development	#24
March 1973	Federal Government and Energy R&D. Historical Background	Serial B

Committee publications in press:

December 1973	Energy Facts
Hearings Before the Subcommittee on Energy:	
June 7, 1973 ff	Solar Energy for Heating and Cooling
June 19, 1973 ff	Conservation and Efficient Use of Energy

Committee publications in preparation:

Hearings Before the Subcommittee on Energy:	
Sept. 11, 1973 ff	Geothermal Energy
Sept. 25, 1973 ff	Energy and Environmental Standards
Nov. 13, 1973 ff	H.R. 10952 et al.; Solar Heating and Cooling Demonstration Act
Nov. 20, 1973	Research, Development and the Energy Crisis
December 1973	Energy from Oil Shale

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